

**Alberta Assessment Consortium**  
**Grade 1 Mathematics**  
**Performance Assessment Task: Teacher Resource Materials**

**Mr. Wheelie**

**CONTEXT FOR LEARNING**

Students work at a toy factory and are presented with a request to use 16 wheels to build some toys. They must create a plan to solve the problem that includes at least 1 bicycle and 1 tricycle and show more than one way to solve the problem. Once the students have completed their plan, they meet with the factory boss (the teacher) to show that their plan will work by demonstrating counting strategies and describing the addition process.

This task provides rich opportunities for students to work with concrete materials to help them construct meaning and develop essential links among concrete, pictorial and symbolic representations (see Program of Studies with Achievement Indicators, 2007, p. 2). The task involves the students in an authentic problem that has multiple solutions. As students engage in conversation with their peers and with their teacher, they refine their ability to communicate and reason mathematically (2007, p. 4).

**Teacher Resource Materials include:**

- Learner Outcomes (p. 2)
- Assessment Criteria (p. 2)
- Teacher Observation Checklist (p. 3)
- For Best Results (pp. 4 – 5)

[Student Task and Evaluation Tools](#)



**Getting the water to the end of the furrow  
in the interest of student learning**

## Grade 1 Mathematics Performance Assessment Task

### Mr. Wheelie

### ASSESSMENT AND EVALUATION OF STUDENT LEARNING

This performance task addresses the following learner outcomes (shown in Times New Roman font) from the Mathematics Program of Studies:

**NOTE:** Where text is grey, that portion of the outcome is not specifically addressed in this task.

<b>MATHEMATICAL PROCESSES</b>	<b>Criteria for Evaluation*</b>
Mathematical processes are skills that are addressed at all grade levels. They are not taught as discrete skills but are integrated into the specific outcomes. Links to the processes are identified within square brackets after the specific outcomes.	Students provide evidence of their learning as they:
Students are expected to:	<ul style="list-style-type: none"> <li>explain ideas and actions using mathematical language</li> </ul>
<ul style="list-style-type: none"> <li>communicate in order to learn and express their understanding</li> </ul>	<ul style="list-style-type: none"> <li>develop and apply strategies to solve problem</li> </ul>
<ul style="list-style-type: none"> <li>develop and apply new mathematical knowledge through problem-solving</li> </ul>	<ul style="list-style-type: none"> <li>justify solution</li> </ul>
<ul style="list-style-type: none"> <li>develop mathematical reasoning</li> </ul>	

<b>Grade One Learner Outcomes</b>	<b>Criteria for Evaluation*</b>
<b>General Outcome</b> Develop number sense. <b>Specific Outcomes:</b>	Students provide evidence of their learning as they:
2. Subitize (recognize at a glance) and name familiar arrangements of 1 to 10 objects or dots. [C, CN, ME, V]	<ul style="list-style-type: none"> <li>represent numbers</li> </ul>
4. Represent and describe numbers to 20 concretely, pictorially, and symbolically. [C, CN, V]	
2. Subitize (recognize at a glance) and name familiar arrangements of 1 to 10 objects or dots. [C, CN, ME, V]	<ul style="list-style-type: none"> <li>demonstrate counting strategy(ies)</li> </ul>
3. Demonstrate an understanding of counting by: <ul style="list-style-type: none"> <li>indicating that the last number said identifies “how many”</li> <li>showing that any set has only one count</li> <li>using the counting-on strategy</li> <li>using parts or equal groups to count sets</li> </ul> [C, CN, ME, R, V]	
9. Demonstrate an understanding of addition of numbers with answers to 20 and their corresponding subtraction facts, concretely, pictorially, and symbolically by: <ul style="list-style-type: none"> <li>using familiar mathematical language to describe additive and subtractive actions</li> <li>creating and solving problems in context that involve addition and subtraction</li> <li>modeling addition and subtraction, using a variety of concrete and visual representations, and recording the process symbolically.</li> </ul> [C, CN, ME, PS, R, V]	<ul style="list-style-type: none"> <li>demonstrate addition process(es)</li> </ul>

\* Criteria statements appear again in the first column of the evaluation tools (checklists, rating scales and/or rubrics) and are the basis on which student evaluation is made relative to the learner outcomes.

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### Teacher Observation Checklist

Student Name \_\_\_\_\_ Date \_\_\_\_\_

Criteria from Mathematical Processes		Yes	Not Yet	Teacher Comments (Evidence)
Does the student:				
• explain ideas and actions using mathematical language? [C]				
• develop and apply strategies to solve problem? [PS]				
• justify solution? [R]				
Criteria from Grade One Learner Outcomes		Yes	Not Yet	Teacher Comments (Evidence)
Does the student:				
Represent numbers	• subitize (recognize at a glance) to aid representing?			
	• represent numbers: - concretely? - pictorially? - symbolically?			
	• describe numbers using mathematical language?			
Demonstrate counting strategy(ies)	• subitize (recognize at a glance) to aid counting?			
	• demonstrate counting-on ?			
	• use parts or equal groups to count sets?			
Demonstrate addition process(es)	• model addition: - concretely? - pictorially? - symbolically?			
	• describe addition using mathematical language?			

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#### FOR BEST RESULTS

<b>Instructional Support:</b> What instructional support might students need in order to be successful with the task?	<b>Assessment For Learning Opportunities:</b> What feedback will help students improve their work in progress?
<p>To help students <b>prepare for the task:</b></p> <ul style="list-style-type: none"> <li>• discuss various types of toys with wheels (maximum 4 wheels per toy)</li> <li>• provide a variety of concrete materials to represent wheels. (eg. actual toys, wheels, marshmallows/toothpicks, counters, dot cards, and so forth)</li> </ul> <p>NOTE: If the task as written is too complex for some students to complete independently, teachers may choose to simplify the task and provide additional coaching and scaffolding.</p>	<ul style="list-style-type: none"> <li>✓ Share the assessment task and criteria with students at the beginning of the unit to help focus their learning during the unit of study.</li> <li>✓ Introduce the rating scale to the students and discuss the various levels of independence described.</li> <li>✓ View exemplars of student work.</li> </ul> <p>NOTE: Exemplars are currently not available for this task. <a href="#">Contact AAC</a> for information on how to submit exemplars for publication.</p>
<p>To help students <b>develop mathematical process skills</b> (Communication, Problem Solving, Reasoning):</p> <ul style="list-style-type: none"> <li>• Model mathematical language and questioning strategies with students. E.g. How do you know that? What were you thinking? Can you show me another way? What did you see in your head? Are these the same? Are these different?</li> <li>• While working on the task, provide opportunities for students to work with a partner to refine mathematical language and questioning skills (peer-coaching).</li> </ul>	<p><b>Peer Coaching Feedback Tool - Student Page 4</b></p> <ul style="list-style-type: none"> <li>✓ This is an opportunity for oral conversation and informal feedback. The questions on the feedback tool are for the students to ask each other to help clarify their thinking.               <ul style="list-style-type: none"> <li>• It is NOT intended to generate a written response nor for students to generate a mark or a score for their partner.</li> </ul> </li> </ul>
<p>To help students <b>represent and describe numbers:</b></p> <ul style="list-style-type: none"> <li>• Help students subitize (recognize at a glance) and name familiar arrangements by providing regular experiences with automatically recognizing quantity (E.g. dot cards, dominoes, playing cards, dice).</li> <li>• Provide opportunities for students to represent numbers up to 20, using a variety of manipulatives and recording representations pictorially and symbolically.</li> <li>• Provide opportunities for students to practice representing numbers using partitioning (breaking numbers into smaller parts).               <ul style="list-style-type: none"> <li>- Eg. Take 7 blocks. Break them apart. Describe the parts. (Eg. 3 and 4; 5 and 2; 2, 2 and 3)</li> </ul> </li> </ul>	<p><b>Student Self-reflection Rating Scale and Teacher Feedback - Student Pages 2 - 3</b></p> <ul style="list-style-type: none"> <li>✓ This tool identifies the main skills in this task.</li> <li>✓ Students reflect on their level of independence and teachers provide descriptive feedback for students.</li> <li>✓ This tool is not intended to generate a numerical score but rather to provide specific and descriptive feedback to students on their progress towards meeting the outcome.</li> <li>✓ The evidence teachers gather through observations of and conversations with students can be recorded on the Teacher Observation Checklist (Teacher Materials p. 3) and forms the basis for the comments that can be shared with students.</li> <li>✓ Formal reporting to parents is based on whatever reporting system is in place within the school/jurisdiction.</li> </ul>

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<b>Instructional Support:</b> What instructional support might students need in order to be successful with the task?	<b>Assessment For Learning Opportunities:</b> What feedback will help students improve their work in progress?
To help students <b>demonstrate counting strategies:</b> <ul style="list-style-type: none"> <li>Students may count each individual wheel. If so, ask if the student knows another way to count without having to count each individual wheel.               <ul style="list-style-type: none"> <li>For example, students may group all the 2 wheel objects together and count by 2s, then count on.</li> </ul> </li> <li>Students may count in parts or sets.</li> </ul>	Continue to use the <b>Student Self-reflection Rating Scale and Teacher Feedback - Student Pages 2 – 3.</b>
To help students <b>demonstrate addition processes:</b> <ul style="list-style-type: none"> <li>Describe everyday situations as addition actions and model using concrete, visual and symbolic representations.               <ul style="list-style-type: none"> <li>E.g. Two children are at the water fountain. Three more children come. How many children are at the fountain now?</li> <li>E.g. Two children are on the team. We need six children to play the game. How many more children need to come?</li> </ul> </li> </ul>	Continue to use the <b>Student Self-reflection Rating Scale and Teacher Feedback - Student Pages 2 – 3.</b>
To help students with ongoing <b>reflection and goal setting:</b> <ul style="list-style-type: none"> <li>Encourage students to retain their reflection page and review it prior to the start of the next performance task.</li> </ul>	<b>Student Self-Reflection - Student Page 5</b> ✓ Students reflect on their learning and set goals for another learning experience.

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